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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/650,461	08/27/2003	David Dawes	9140.0025	7106

7590 03/14/2005

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Washington, DC 20005-3315

EXAMINER

DUPUIS, DEREK L

ART UNIT	PAPER NUMBER
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2883

DATE MAILED: 03/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/650,461

Applicant(s)

DAWES, DAVID

Examiner

Derek L Dupuis

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 15-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 January 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>3/10/04 & 2/10/05</u> . | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-14, drawn to an optical waveguide device, classified in class 385, subclass 129.
 - II. Claims 15-20, drawn to a method of coupling pump light into a gain medium, classified in class 385, subclass 31.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions of Group II and Group I are related as process of making and product made.

The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the method could be practiced with a different product than that of Group I.

Specifically, a different light source could be used to perform the method rather than the laser diode of the product.

3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

4. Because these inventions are distinct for the reasons given above and the search required for Group II is not required for Group I, restriction for examination purposes as indicated is proper.

5. During a telephone conversation with Gary Edwards (Reg. No. 41,008) on 2/7/2005 a provisional election was made without traverse to prosecute the invention of Group I, claims 1-14. Affirmation of this election must be made by applicant in replying to this Office action. Claims 15-20 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Information Disclosure Statement

6. The information disclosure statements (IDS) submitted on 3/10/2004 and 2/10/2005 have been considered by the examiner.

Drawings

7. Figures 1A-1F should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

8. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: 304 in figure 3A, 616 in figures 6A and 6B, 805 and 806 in figure 8B, and 1105 in figure 11. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement

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drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

9. The disclosure is objected to because of the following informalities: "a high refractive refractive index" in lines 1 and 2 of paragraph 34 should apparently be "a high refractive index". The word "slap" in line 2 of paragraph 36 should apparently be "slab". "VCSELs 1401" in lines 2 and 3 of paragraph 71 should apparently be "VCSELs 1403". Appropriate correction is required.

Product By Process Claims

10. Claims 1-14 are **product-by-process claims**:

Note that a "product by process" claim is directed to the product per se, no matter how actually made, *In re Hirao*, 190 USPQ 15 at 17 (footnote 3). See also *In re Thorpe*, 227 USPQ 964, 966; *In re Luck*, 177 USPQ 523; *In re Fessmann*, 180 USPQ 324; *In re Avery*, 186 USPQ 161; *In re Wertheim*, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); and *In re Marosi et al.*, 218 USPQ 289, all of which make it clear that it is the patentability of the final product per se which must be determined in a "product by process" claim, and not the patentability of the process, and that an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or not. Note that applicant has the burden of proof in such cases, as the above case law makes clear. See also MPEP 2113.

11. Claims 1-14 do not distinguish over the prior art of record regardless of the process used to create the slab waveguide, because only the final product is relevant, and not the process of making such as DC-biased plasma vapor deposition.

Claim Rejections - 35 USC § 102

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

13. Claims 1-4, 6, 7, 9, and 12 are rejected under 35 U.S.C. 102(e) as being anticipated by *Lackritz et al (US 2001/0031122 A1)*.

14. Regarding claim 1, Lackritz et al teach an optical waveguide device comprising a laser diode array coupled to a high refractive index contrast slab waveguide (see paragraph 148). The slab waveguide includes a cladding and a core portion wherein the core portion has a significantly larger index of refraction than the cladding portion (see lines 18-25 of paragraph 35). Lackritz et al also teach that the slab waveguide can be formed by a variety of methods including plasma enhanced chemical vapor deposition (see paragraph 33).

15. Regarding claim 2, Lackritz et al teach an optical waveguide device as discussed above in reference to claim 1. Lackritz et al teach that the slab waveguide is formed from a highly amorphous film (see paragraphs 33-36).

16. Regarding claim 3, Lackritz et al teach an optical waveguide device as discussed above in reference to claim 1. The slab waveguide is optically transparent (see paragraph 36).

17. Regarding claim 4, Lackritz et al teach an optical waveguide device as discussed above in reference to claim 1. The slab waveguide also has a high surface smoothness (see paragraphs 33 and 36).

18. Regarding claim 6, Lackritz et al teach an optical waveguide device as discussed above in reference to claim 1. The waveguide slab is coupled to a diode array (see paragraph 148).

19. Regarding claim 7, Lackritz et al teach an optical waveguide device as discussed above in reference to claim 1. Lackritz et al teach that the high refractive index contrast slab waveguide includes a high refractive index active waveguide core and an intermediate refractive index passive cladding (see paragraph 36).

20. Regarding claim 9, Lackritz et al teach an optical waveguide device as discussed above in reference to claim 7. Lackritz et al teach that the cladding should have a thickness in the vertical direction to capture a desired amount of light (see paragraph 41).

21. Regarding claim 12, Lackritz et al teach an optical waveguide device as discussed above in reference to claim 1. Lackritz et al also teach that the slab waveguide includes an array of waveguide channels (see paragraph 148).

Claim Rejections - 35 USC § 103

22. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

23. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Lackritz et al (US 2001/0031122 A1)* as applied to claim 1 above, and further in view of *Beach (NPL)*.

24. Regarding claim 5, Lackritz et al teach an optical waveguide device as discussed above in reference to claim 1. Lackritz et al do not teach that the slab waveguide includes a lens duct.

Beach teaches a waveguide device with a lens duct to couple light from a diode into a

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waveguide. It would have been obvious to one of ordinary skill in the art at the time of invention to use a lens duct as taught by Beach in the waveguide device as taught by Lackritz et al for the purpose of “amplifying the irradiance of laser diode array pump sources” (see abstract of Beach).

25. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Lackritz et al (US 2001/0031122 A1)* as applied to claim 7 above, and further in view of *Hubner et al (NPL)*.

26. Regarding claim 8, Lackritz et al teach an optical waveguide device as discussed above in reference to claim 7. Lackritz et al do not teach that the slab waveguide is folded in the plane of the slab. Hubner et al teach an optical waveguide device shown in figure 2a with a slab waveguide that is folded in the plane of the slab. It would have been obvious to one of ordinary skill in the art at the time of invention to modify the slab waveguide taught by Lackritz et al by folding it as taught by Hubner for the purpose of increasing the amplification of the waveguide. The longer the waveguide, the greater the gain. Hubner teaches that by “curling” the waveguide within an area, the a longer waveguide can be used thereby increasing the amplification of the device (see the bottom paragraph of page 72).

27. Claims 10 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Lackritz et al (US 2001/0031122 A1)* as applied to claims 1 and 12 above, and further in view of *Medin et al (US 6,760,520 B1)*.

28. Regarding claim 10, Lackritz et al teach an optical waveguide device as discussed above in reference to claim 1. Lackritz does not teach that the waveguide includes a mode-size converter. However, Medin et al teach a mode size converter for use in an optical waveguide device. It would have been obvious to one of ordinary skill in the art at the time of invention to use the mode-size converter taught by Medin et al in the optical waveguide device of Lackritz et

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al for the purpose of improving optical coupling between a waveguide and a light emitting device (see abstract).

29. Regarding claim 14, Lackritz et al teach an optical waveguide device as discussed above in reference to claim 12. Lackritz does not teach that the waveguide includes a reverse tapered region (see figure 2). However, Medin et al teach a mode size converter with a reverse tapered region for use in an optical waveguide device. It would have been obvious to one of ordinary skill in the art at the time of invention to use the mode-size converter with the reverse tapered region taught by Medin et al in the optical waveguide device of Lackritz et al for the purpose of improving optical coupling between a waveguide and a light emitting device (see abstract).

30. Claims 11 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Lackritz et al (US 2001/0031122 A1)* as applied to claim 1 above, and further in view of *Henrichs (US 2003/0185266 A1)*.

31. Regarding claim 11, Lackritz et al teach an optical waveguide device as discussed above in reference to claim 1. Lackritz et al do not teach that the diode could be a VCSEL. However, Henrichs shows that a VCSEL and a diode are equivalent structures known in the art and that they are both used in optical pumping. It would have been obvious to one of ordinary skill in the art at the time of invention to substitute a VCSEL for a laser emitting diode as a light source.

32. Regarding claim 13, Lackritz et al in view of Henrichs teach an optical waveguide device as discussed above in reference to claim 11. Lackritz et al also teach that the mode size of an optical beam transmitted through the waveguide slab is smaller than the mode size of an incident light beam (see lines 18-25 of paragraph 35). The field of the optical mode decreases though the waveguide.

Conclusion

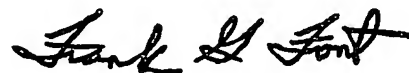
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Derek L. Dupuis whose telephone number is (571) 272-3101. The examiner can normally be reached on Monday - Friday 8:30am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G. Font can be reached on (571) 272-2415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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